



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: 09/803,876

Filing Date: March 12, 2001

Applicant: Peachee et al.

Group Art Unit: 2834

Examiner: Julio C. Gonzalez

Title: SEGMENTED STATOR SWITCHED
RELUCTANCE MACHINE

Attorney Docket: 3174-000002

Box [Non-Fee Amendment]
Commissioner of Patents and Trademarks
Washington, D.C. 20231

DECLARATION OF DR. RICHARD S. WALLACE
UNDER 37 C.F.R § 1.132

I, Dr. Richard S. Wallace, hereby declare that:

- 1) I am an Engineer for Emerson Electric Co. and one of the named inventors of the above-identified U.S. Patent Application.
- 2) While working at Emerson Electric Co., I helped design a switched reluctance machine with a non-segmented stator.
- 3) I have reviewed Japanese Patent to Oki (JP Pat. No. 411289701A) (hereinafter "Oki") and an English translation of Oki.

- a) I scanned and enlarged FIG. 1 of Oki.
- b) Using CAD tools, I drew a circle that intersects inner edges of the stator teeth and a radial line that intersects a border between adjacent stator teeth.
- c) Using the radial line, the circle and the stator tooth, I calculated the total possible area that could be used for winding wire, excluding area occupied by tooth insulation.
- d) I then calculated the effective area that is occupied by the winding wire of Oki, including the unfilled areas between round wires.
- e) I divided the effective winding wire area by the total possible area. The result was 62% slot fill.

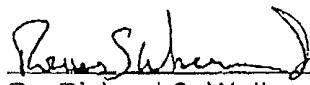
5) I am not aware of any sensorless control systems for brushless permanent magnet machines and/or induction machines that operate properly if the iron core is heavily saturated with magnetic flux.

6) Switched reluctance machines, on the other hand, are frequently operated with levels of magnetic flux in their iron cores that exceed the levels used in other types of electric machines. I am aware of sensorless control systems for switched reluctance machines that do operate properly if the iron core is heavily saturated with magnetic flux.

7) By segmenting the stator and increasing slot fill of the switched reluctance machine, the diameter of the winding wire can be increased using the same number of turns.

- 8) The increased diameter of the winding wire allows increased current to be driven through the windings, which increases torque output.
- 9) The increased current levels also increase magnetic loading and magnetic saturation.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. § 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.



Dr. Richard S. Wallace

24 FEBRUARY 2003
Date